

LAPTEV, N.N., inzh.; SEDOV, L.N., inzh.

Prospects for improving bridge-type power amplifiers. Elektro-
tekhnika 35 no.2:54-56 F '64. (MIRA 17:3)

5(3,4)

AUTHORS:

Fedotova, O. Ya., Ashkarov, M. A.,
Sedov, L. K.

SCV/153-53-4-17/22

TITLE:

Dependence of Polyamides Melting Temperature on Their
Structure (Zavisimost' temperatury plovleniya poliamidov
ot ikh stroeniya)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimiches-
kaya tekhnologiya, 1958, Nr 4, pp 106 - 111 (USSR)

ABSTRACT:

The physical properties of the polyamides are, as it is
known, determined by the chemical structure of the
macromolecules, by the polar groups contained in them,
the number of the atoms in the member of the chain,
and the presence and arrangement of the heteroatoms
in the polymer chain. Thus, the melting temperature
of the polyamides depends on the structure of the
initial substances (Refs 1-3). The formula $y = 7x + 110$ (1)
establishes a connection between the melting temperature
of the even polyamides (with an even number of methylene
groups in the elementary members) and the number of hydrogen
bindings in the basic member, where y denotes the
melting temperature, and x the number of hydrogen bonds

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in mole per cent. However, the melting temperatures calculated according to the formula (1) do not always agree with those experimentally found. The authors regarded it as possible to prove the dependence of the melting temperatures of the even aliphatic polyamides on the number of the methylene groups in a basic member of the chain. To determine the influence exerted by each pair of methylene groups in the aliphatic chain the differences of the experimentally found melting temperatures of various pairs of even polyamides were calculated. Therefrom the mean value q_m was calculated as arithmetic mean from several q_m values. q_m turned out to be 22.2, i.e. the increase in number of the methylene groups by two decreases the melting temperature by 22.2° . From the experimental data the authors derived the equation $T = 375 - 22.2q = 375 - 11.1n$ (2), where T denotes the melting temperature in $^\circ\text{C}$, q the number of methylene groups pairs, n the number of methylene groups in a main member. The same expression can be determined

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graphically. The data in table 1 show a better agreement of the melting temperatures calculated according to formula (2) with the experimental data, than those of formula (1). In a similar way the formula

$$T = 214 - \frac{73}{x} \quad (3a) \text{ is suggested for the polyurethanes.}$$

The melting temperature of all aliphatic and aryl aliphatic polyamides with an even number of methylene groups in the aliphatic part of the elementary member and with a linear structure can be expressed by the formula $T = 375 - 11.4n + 20m^2$ (6), if there are no substituents; in this case m denotes the number of phenylene groups in the elementary member. Table 3 gives the melting temperatures of the aryl aliphatic polyamides obtained experimentally as well as by the calculation with formula (6). There are 1 figure, 3 tables, and 22 references, 11 of which are Soviet.

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Dependence of Polyamides Melting Temperature on Their Structure SOV/153-58-4-17/22

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskii institut im.D.I. Mendeleyeva (Moscow Chemical Technological Institute imeni D.I.Mendeleyev) Kafedra tekhnologii vysokomolekulyarnykh soyedineniy (Chair of the Technology of High-Molecular Compounds)

SUBMITTED: January 10, 1958

Card 4/4

AUTHORS: Fedotova, O. Ya., Askarov, M. A., Sedov, L. N. 79-28-3-47/61

TITLE: The Synthesis and the Investigation of the Poly-3,3'-Dimethyldiphenylmethaneadipin-N,N'-Diethylamide (Sintez i issledovaniye poli-3,3'-dimetildifenilmetanadipin-N,N'-dietilamida)

PERIODICAL: Zhurnal Obshchey Khimii, 1958. Vol. 28, Nr 3, pp. 775-779 (USSR)

ABSTRACT: The authors wanted to investigate the effect of the substitution at nitrogen and to synthesize a polymer soluble in usual solvents. Therefore they used in this work one of the widely applied methods of the modification of polyamides, that is to say using an N-alkylated diamine as initial product. N,N'-diethyl-4,4'-diamino-3,3'-dimethyldiphenylmethane (reference 2) served for this, which enters reaction with adipic acid according to the given scheme. The final product of polycondensation was a low-melting, brittle, vitreous yellow product soluble in most of the usual solvents. Experiments made it possible to find the best conditions for the synthesis of the polyamide: the highest molecular polymer is obtained by carrying out the reaction in the flow of an inert gas for five

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The Synthesis and the Investigation of the Poly-3,3'-Dimethyl-79-28-3-47/61
diphenylmethane adipin-N,N'-Diethylamide

hours with a subsequent vacuum treatment (3-5 mm) at 240-2600 C. This made it possible to increase the molecular weight of the polyamide from 5500-6500 to 9050-9530. For the purpose of further increasing the molecular weight of the polyamide the effect of an excess diamine (0,5 to 10% above the equi-molecular weight) on the molecular weight and the melting point was examined. It turned out that with 2% excess diamine in the polycondensation process - in molten as well as in dissolved state - the molecular weight of the polyamide can be increased from 8500-8780 to 11130-12000 and the melting point can be raised from 46 to 78%. From the mentioned melting points and the data on the molecular weight can be seen (table 1) that an interdependence exists between them. The analytical expression of this dependence is graphically represented by the equation $Bp = \frac{M-4000}{96,2}$ Bp denoting the boiling point, M

the molecular weight. In order to support the validity of this equation a great number of samples of the poly-3,3'-dimethyl-diphenylmethane adipin-N,N'-diethylamide were synthesized, their melting points and molecular weights being determined.

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The Synthesis and the Investigation of the Poly-3,3'-Dimethyl- 79-28-3-47/61
diphenylmethaneadipin-N,N'-Diethylamide

The comparison of these molecular weights with the values of those calculated from the melting point completely proves the above mentioned rules (table 2). There are 1 figure, 4 tables, and 6 references, which are Soviet.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskii institut im. D. I. Mendeleyeva (Chemical Technological Institute imeni D. I. Mendeleyev)

SUBMITTED: May 9, 1957

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5(3), 15(8)

BDV/156-53-1-11/54

AUTHORS:

Losev, I. P., Fedotova, O. Ya., Asharev, M. A., Sador, L. N.

TITLE:

The Synthesis and Investigation of Mixed Polyamides on the Basis of Aromatic Diamines and Adipic Acid (Sintez i issledovaniye smeshannykh poliamidov na osnove aromaticheskikh diaminov i adipinovoy kisloty)

PERIODICAL:

Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 159 - 161 (USSR)

ABSTRACT:

The following substances were used for the mixed condensation with adipic acid: 4,4'-diamino-3,3'-dimethyl-diphenyl-methane and its N,N'-diethyl-, dipropyl- and dibutyl derivatives. Three binary systems of mixed polyamides were obtained. All of them are soluble in tricresol, sulphuric and formic acids, with the exception of those in which the ratio of the non-substituted diamine to the alkylated diamine was 0.2:0.8. These substances are alcohol-soluble, independently of the size of the alkyl radical. The N,N'-dipropyl- and N,N'-dibutyl derivatives of 4,4'-diamino-3,3'-dimethyl-diphenyl-methane bring about a more essential lowering of the melting point than does the polyamide of the N,N'-diethyl substituent. In

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SOV/156-59-1-41/54

order to study the influence of the aromatic rings on the melting point of the condensation product mixed polymers were produced from AG-salt, the above-mentioned diamines, and adipic acid. Two types were thus obtained. The first group (constituted by 4,4'-diamino-3,3'-dimethyl-diphenyl-methane) yields little transparent to opaque substances. It is only with a molar ratio of 0.2:0.8 between fatty and aromatic diamines that a yellowish, vitreous product was obtained. The fusions of the polymers with aliphatic to aromatic diamine ratios of 0.8:0.2, 0.6:0.4, and 0.4:0.6 yield elastic filaments. Rising aliphatic diamine additions (AG-salt) result in a linear lowering of the melting point (Diagram). The second group (constituted by N,N'-diethyl-3,3'-dimethyl-diphenyl-methane) yields opaque white substances that are insoluble in the ordinary organic solvents. As in the first group, only the mixed polyamide with ratio of aliphatic:aromatic 0.2:0.8 constitutes an exception and forms a yellowish glass that dissolves on heating in methanol and that has an essentially lower melting point than the other products (Diagram). There are 2 figures, 1 table, and 6 refer-

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The Synthesis and Investigation of Mixed Polyamides on the Basis of Aromatic Diamines and Adipic Acid

ences, 4 of which are Soviet.

ASSOCIATION: Kafedra tekhnologii vysokomolekulyarnykh soyedineniy Moskovskogo khimiko-tekhnologicheskogo instituta im. D. I. Mendeleeva
(Chair of the Technology of High-molecular Compounds of the Moscow Institute of Chemical Technology imeni D. I. Mendelyev)

SUBMITTED: March 21, 1958

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S/191/60/000/002/008/012
B027/B058

AUTHORS: Li, P. Z., Mikhaylova, Z. V., Sedov, L. N., Eksanov, V. A.

TITLE: Laminated Plastics on the Basis of Glass Fiber.
Communication V. Contact Method for the Forming of Large
Products From Polyester Glass Plastics

PERIODICAL: Plasticheskiye massy, 1960, No. 2, pp. 29-35

TEXT: The authors describe contact forming of large products from polyester glass plastics as the simplest and most economic method, since hardening of unsaturated polyester resins is possible by addition of certain admixtures at room temperature. Molds from metal or glass plastic are best suited for the process; positive molds produce a smooth inner surface and negative ones a smooth outer surface; there are also multiple-part molds to facilitate the removal of complicate shape products; electrically heated molds are also used sometimes. In order to facilitate removal of the products from the molds, various separating agents are used, such as films from certain polymers (polyamide film ПК-4 (PK-4)), most frequently, however, alcoholic-aqueous solutions of polyvinyl alcohol, ✓

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but also mastic and pastes on wax- or paraffin basis. Various decorative coatings from resin with hardeners are applied to the mold by sprayer or brush. After the coating has gelatinized, the shredded glass fiber and resin with hardeners are attached by spraying machine or spray gun. When using glass fabric or glass mats, resin with hardener and accelerator as well as glass filler are laid in layers and each layer is rolled. The processing time for the resin of the type ПН-1 (PN-1) with active material and accelerator amounts to 40 to 90 min; inert fillers in powder form are sometimes admixed to increase viscosity and hardness. For the contact method, various types of glass fabrics may be used, which must previously be cut to shape, a larger edge having to remain, which facilitates removal from the mold. The glass fabric cut to shape is connected in the form of butt joints which must be covered by the next layer. Best durability of the products is obtained with a content of 40 to 50% polyethylene resin in glass plastic and 60 to 70% in glass mats. Smaller products are removed from the mold by hand and larger ones by machine, and undergo machine finishing. If a product consists of several parts, the best way of assembly is the simultaneous use of glued and mechanical joints. Subsequent

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repair work is easy: it is sufficient to polish the defect with emery paper and to apply some layers of resin-saturated glass mat or glass fabric. When working with polyethylene resins, it must be considered that their evaporation leads to irritation of mucous membrane and thus a sufficient ventilation of the rooms is absolutely necessary; rubber gloves or skin-protecting cream are required. These resins are also inflammable so that fire extinguishing equipment should be available in the plant. Due to danger of explosion, hydrogen peroxide and the accelerator must in all cases be added to the resin separately. There are 8 figures, 4 tables, and 54 references: 1 Soviet, 24 German, 1 Swedish, 1 Japanese, 17 US, 2 British, 1 French, 3 Czechoslovakian, and 4 Polish. ✓

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S/191/60/000/003/002/013
B016/B054

AUTHORS: Li, P. Z., Mikhaylova, Z. V., Sedov, L. N., Kaganova, Ye.L.

TITLE: Laminated Plastics on the Basis of Glass Fiber. Report 6.
Effect of the Degree of Polycondensation of Polyester
Resins and of the Concentration of Terminal Groups on the
Properties of Resins and Glass-reinforced Plastics

PERIODICAL: Plasticheskiye massy, 1960, No. 3, pp. 9-12

TEXT: The authors report on their studies of the effect of the degree of polycondensation and acidity of polydiethylene glycol maleinate phthalate (3 : 2 : 1) on some properties of the solid solution of this resin in styrene ПН-1 (PN-1), as well as on the properties of glass-reinforced plastics when using this resin as a binder. The authors had conducted the synthesis of the resin, and had published it earlier together with indices (Refs. 1,2). They found that polyester resins of different polycondensation degrees (acid number 20-100 mg KOH/g) in the presence of industrial isopropyl benzene hydrogen peroxide (3%) and HK (NK) accelerator (8%) gelatinize faster with increasing molecular

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Laminated Plastics on the Basis of Glass Fiber. Report 6. Effect of the Degree of Polycondensation of Polyester Resins and of the Concentration of Terminal Groups on the Properties of Resins and Glass-reinforced Plastics

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weight and decreasing acidity. This phenomenon was ascribed to: 1) extension of macromolecules of the unsaturated polyester increases the probability of copolymerization with styrene; 2) increased acidity inhibits the dissociation of the hydrogen peroxide; the free carboxyl groups of the polyester have a deactivating effect; 3) possible isomerization of maleic to fumaric acid (Ref.5). The authors keep on studying this problem. Simultaneously with the acceleration of gelatinization, the polyesters solidify to a higher degree, and their hardness and resistance to water increase. Further, it is shown that the mechanical strength of resins increases with increasing molecular weight of the initial polymer. This effect also prevails in T-1 (T-1) glass-reinforced polyester plastics. Tensile strength and resistance to static bending are practically independent of the degree of acidity and polycondensation of the binding resin. It is noted that the dielectric properties of glass-reinforced plastics depend chiefly on water absorption. $\tan \delta$ for specimens with binding resins of an acid number of 70 mg KOH/g is much larger than with resins of 43.3 and 28 mg KOH/g.

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Laminated Plastics on the Basis of Glass Fiber. S/191/60/000/003/002/013
Report 6. Effect of the Degree of Polycondensa- B016/B054
tion of Polyester Resins and of the Concentration of Terminal Groups on
the Properties of Resins and Glass-reinforced Plastics

The bending strength of glass-reinforced plastics decreases in water.
The concentration of the terminal groups of the binder has its main
influence when the specimen is immersed into water. The authors' re-
sults confirm the correctness of their choice of the final acid numbers
(20-45 mg KOH/g) for resins used in the production of glass-reinforced
plastics. There are 6 figures, 3 tables, and 6 references: 2 Soviet,
1 German, 1 US, and 2 British.

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S/191/60/000/004/003/015
B016/B058

15.8340

2209

AUTHORS: Li, P. Z., Mikhaylova, Z. V., Sedov, L. N.,
Petrilenkova, Ye. B., Libina, S. L.

TITLE: Laminated Glass-reinforced Plastics. Report VIII. A Polyester
Binding Agent for Glass-reinforced Plastics

PERIODICAL: Plasticheskiye massy, 1960, No. 4, pp. 9-12

TEXT: The authors describe polypentaerythrite dichlorohydrin maleinate phthalate (PDP), which was synthesized for the first time. It was the purpose of the study to widen the raw-material basis of polyvalent alcohols for the synthesis of unsaturated polyester resins by using polypentaerythrite. In contrast with the inadequate methods known, the authors proved that unsaturated polyesters with higher fire resistance can be synthesized by using a chlorine-containing alcohol component. For the polycondensation they used pentaerythrite dichlorohydrin (PED), which is formed by saponification of the reaction product of pentaerythrite and thionyl chloride in the presence of pyridine. PDP was synthesized from PED by adding maleic acid and phthalic anhydride (molar ratio 1.0 : 0.5 : 0.5) in

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Report VIII. A Polyester Binding Agent for
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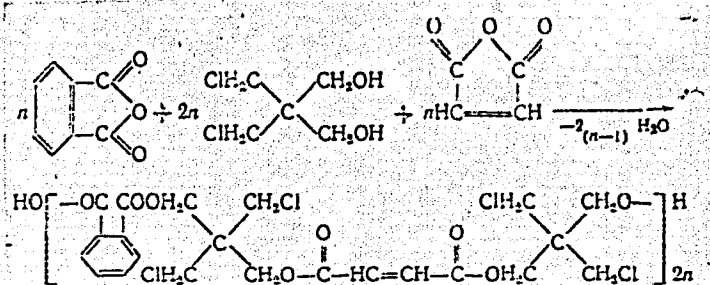
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the inert gas at 170-190°C (see scheme). The resin yield was 89 to 92 % of the total content of all components. After solidification, PDP mixed with 1/5 styrene gives a product that is difficultly combustible and stops burning after removal of the flame. The product from 70 parts by weight of PDP and 30 units of styrene is still less combustible. PDP may be mixed with methyl methacrylate at any proportion, and its solution in styrene (45 : 55) does not tend toward stratification. Its solutions are gelatinized at room temperature within three hours in the presence of 6% isopropyl benzene hydrogen peroxide and 8% of the accelerator HK(NK). This also occurs within 15 minutes in the presence of 3% methyl-ethyl ketone peroxide and 3% NK. From PDP and glass fabric T₁ (T₁), the authors produced samples of self-extinguishing glass textolite, which are superior to the product from styrene resin ПН-1 (PN-1) with respect to their most important mechanical and insulation properties. The authors prepared a test sample of higher transparency from PDP and glued glass mat. Papers by G. S. Petrov, K. A. Andrianov, and S. I. Dzhenchel'skaya (Ref. 2), as well as G. S. Petrov and K. N. Vlasova (Ref. 3) are mentioned. There are 5 figures, 2 tables, and 7 references: 5 Soviet, 1 French, and 1 German.

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B016/B058



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S/191/60/000/008/002/014
B004/B056

15.8109 2109,2209

AUTHORS: Li, P. Z., Mikhaylova, Z. V., Sedov, L. N.

TITLE: Laminated Plastics on the Basis of Fiber Glass. Report XI.
The Influence of the Content of Monomers Upon the Properties
of Unsaturated Polyester Resins and Glass Plastics With
Polyester Binders

PERIODICAL: Plasticheskiye massy, 1960, No. 8, pp. 7-16

TEXT: The authors investigated the influence exerted by the content of monomers upon the properties of unsaturated polyester resins. According to Refs. 8-10, the following resins were synthesized (Table 1): polyethylene glycol maleate (1), polyethylene glycol maleate dipinate (2), polyethylene glycol maleate phthalate (3a and 3b), polyethylene glycol maleate diphenate (4), polypentaerythrite dichlorohydrin maleate dipinate (5), and polypentaerythrite dichlorohydrin maleate phthalate (6). These polyesters were dissolved in styrene or triethylene glycol dimethacrylate of the type TTM-3 (TGM-3). They were gelatinized at 20°C in the presence of isopropyl benzene hydroperoxide and HK(NK) accelerators. The following

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results are given: The specific gravity as a function of the concentration at 20°C is no linear function (Fig. 1); on the other hand, it decreases linearly with increasing temperature (Fig. 2). Viscosity at 25°C (Figs. 3-5) does not obey the equation by Frenkel' (Ref. 11), but the equation $\log \eta = a - b \log t$ (Fig. 6) (η = viscosity in centipoise; t = temperature in °C; a , b = constants). For 67% solutions in styrene the following equation is given: $\eta \approx a/t^2$. The authors discuss the data published on the hardening of polyester resins and arrive at the conclusion that the copolymerization of polyester with styrene must be considered to be the main process. They investigated the rate of gelatinization (Fig. 7) which has a minimum at 25-28% of styrene and a maximum at 32-43% of styrene, the dependence of the specific gravity of the hardened resin (Fig. 8) and of the shrinkage (Fig. 9) of the content of monomers. Shrinkage of the styrene copolymer was proportional to the styrene content only between 15-20 and 45-50%, whereas the resins containing TGM-3 showed a low shrinkage that was proportional to its content. In order to determine the

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 Report XI. The Influence of the Content of Monomers Upon the Properties of Unsaturated Polyester Resins and Glass Plastics With Polyester Binders B004/B056

optimum styrene content, the authors determined the thermal stability according to Vicat (Fig. 10), the hardness by means of I. F. Kanavet's press (Fig. 11), and the extractability by means of acetone (Fig. 12), while the water adsorption (Fig. 13) was determined as a function of the styrene content: Table 2, comparison between the optimum styrene content in solutions of polyester resins with the styrene quantity which is equivalent to the content of double bonds of the polyester:

Styrene content in % by weight: Polyester:	1	2	3a	3b	4	5	6
Equivalent to the double bonds	34.3	30.2	25.2	23.5	24.8	17.0	16.7
Optimum on the basis of the thermal stability	32.5	30.0	30.0	26.0	48.0	40.0	40.0
Optimum on the basis of the Brinell hardness	38	37.5	37.5	37.5	37.5	37.5	37.5
Optimum of the basis of extraction by means of acetone	-	30	37.5	-	40	40	40

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Laminated Plastics on the Basis of Fiber Glass. S/191/60/000/008/002/014
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The mechanical strength as a function of the styrene content was determined for (3) and (6) (compression strength, Fig. 14; bending strength, Fig. 15). The maxima at 38% styrene apply also to glass textolite (Figs. 16 and 17). Table 3 lists the insulating properties of glass textolites, which also show maxima at 38% styrene ($\tan \delta = 0.014$, disruptive voltage 17.9 kv/mm). As the properties of glass plastics depend on saturation, the type ПН-2 (PN-2) is recommended among the types of resin developed at the NIIPM (Scientific Research Institute of Plastics), which has a centipoise of about 7000 for saturation under pressure and at increased temperature, and the types ПН-1 (PN-1), ПН-3 (PN-3), and ПН-4 (PN-4) (maximum of 1000 centipoise) for saturation at room temperature. L. A. Nikitina and Ye. B. Petrilenkova, both undergraduate students of MITKhT (Moscow Institute of Fine Chemical Technology) took part in the synthesis. There are 17 figures, 3 tables, and 19 references: 5 Soviet, 2 US, 3 British, 1 Czechoslovakian, 5 German, and 2 Japanese.

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ISKRA, Ye.V.; SHTAYKHMAN, G.A.; LI, P.Z.; MIKHAYLOVA, Z.V.; SEDOV, L.N.;
AL'SHITS, I.M.; KATS, I.F.; PAPYSHEVA, Ye.V.; EKSANOV, V.A.

Laminated plastics based on glass fiber. Report No.12: Coloring
of polyester glass reinforced plastics. Plast.massy no.9:
11-15 '60. (MIRA 13:11)

(Glass reinforced plastics)
(Dyes and dyeing--Plastics)

LI, P.Z.; MIHAYLOVA, Z.V.; SEDOV, L.N.; KAGANOVA, Ye.L.; GEFTER, Ye.L.

Laminated plastics based on glass fibers. Report No.13: New binder
based on unsaturated polyester resins with the admixture of phospho-
rus organic compounds. Plast.massy no.11:9-10 '60. (MIRA 13:12)
(Laminated plastics) (Glass fibers)

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S/191/61/000/012/003/007
B101/B110

AUTHORS: Li, P. Z., Mikhaylova, Z. V., Sedov, L. N., Kostygov, V. A.

TITLE: Synthesis and examination of unsaturated N-bis- β -hydroxy-ethyl aniline polyester resins

PERIODICAL: Plasticheskiye massy, no. 12, 1961, 11-14

TEXT: This paper deals with the synthesis and examination of unsaturated polyester resins whose water resistance was increased by aromatic components. N-bis- β -hydroxy-ethyl aniline (diethanol aniline) was used as initial substance. The synthesis was conducted by esterification of commercial diethanol aniline (melting point: $53-55^{\circ}\text{C}$) with maleic or maleic + phthalic acids. The compounds were fused at $175 \pm 2^{\circ}\text{C}$ in a CO_2 atmosphere. The reaction course was observed by determining the acid number. After 35-45 min, the compounds were cooled down to $130-140^{\circ}\text{C}$, 0.02% of hydroquinone was added as stabilizer, and they were cooled down to room temperature. Reaction time was 3-5 hr, and the yield approximately 95%. Structures

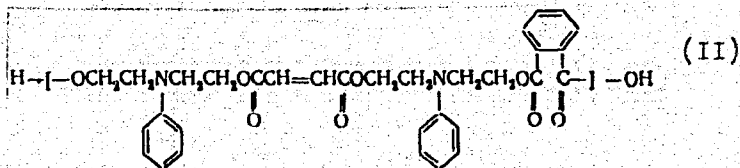
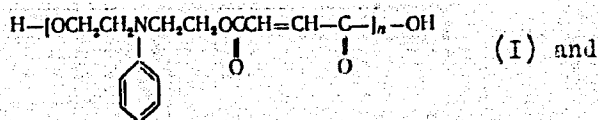
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Synthesis and examination ...

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are given for the resins obtained. Polyester (I) is a reddish-brown, transparent resin with a softening point of about 45°C, a molecular weight of 1250, and a maximum compatibility with styrene of 58%. Polyester (II) is orange-red and has a molecular weight of 1600. Both resins are soluble in organic solvents and have a specific gravity of 1.276. The authors studied the physicochemical properties of the copolymers of (I) and (II) with styrene and the following initiators: (a) benzoyl peroxide; (b) 90%;

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isopropyl benzene hydroperoxide; (c) 50% solution of methyl-ethyl ketone peroxide in dimethyl phthalate; (d) isopropyl benzene hydroperoxide + HK (NK) accelerator containing approximately 0.7% Co; (e) methyl-ethyl ketone peroxide + NK. Initiators (a)-(c) were used at 100°C, combinations (d) and (e) at 20°C. Table 4 gives physicomachanical data for the resins obtained. The authors found: (1) Synthesis is almost 50% shorter than with diethylene glycol; (2) compatibility with styrene is higher than for diethylene-glycol or ethylene-glycol resins; (3) at 20°C, hardening of (I) in the presence of benzoyl peroxide is very slow (> 5000 min) due to inhibition by an excess of amine groups; (4) at 100°C, fast gel formation sets in (3-5 min) in the presence of benzoyl peroxide, but hardening is incomplete. The Brinell hardness remains low; (5) the optimum at 20°C was 1-4% methyl-ethyl ketone peroxide with 2-4% NK; at 100°C: 1-2% isopropyl benzene hydroperoxide; (6) with both resins, cross linking is induced by a temperature elevation from 20 to 100°C; (7) shrinkage increases linearly with increasing styrene content; (8) the water resistance of synthesized resins is very high. This confirms the assumption that water-resistant polyester resins are obtained by using aryl-containing alcohol components. Papers by K. D. Petrov, G. B. Tal'kovskiy (ZhPKh, 25, Card 3/5

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B101/B110

567, 1225 (1952); 28, 1205 (1955)) are mentioned. There are 5 figures, 5 tables, and 5 references: 2 Soviet and 3 non-Soviet. The two most recent references to English-language publications read as follows: R. N. Fuoss, D. Edelson, J. Polymer Sci., 6, 523 (1951); L. H. Vaughan, Plast. Inst. Trans. and J., 29, no. 79, 7 (1961).

Table 4. Physicomechanical properties of hardening products obtained from styrene solutions of polyester (I) and (II).

Legend: (A) Characteristics; (B) solution of (I); (C) solution of (II); (a) percentage of styrene in the initial solution; (b) shrinkage during hardening, %; (c) specific gravity, g/cm³; (d) Brinell hardness, kg/mm²; (e) limit of bending strength, kg/cm²; (f) modulus of elasticity on bending, kg/cm²; (g) specific impact strength, kg·cm/cm²; (h) thermostability according to Vicat, °C; (i) thermostability according to Martens, °C; (k) water absorption for 24 hr, %; (l) amount of substances extracted with acetone in a Soxhlet apparatus for 12 hr, %.

Card 4/5

S/081/62/000/021/049/069
B162/B101

AUTHORS: Li, P. Z., Mikhaylova, Z. V., Sedov, L. N.

TITLE: Unsaturated polyester resins

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1962, 449, abstract
21P18 (Vest. tekhn. i ekon. inform. N.-i. in-t tekhn.-ekon.
issled. Gos. kom-ta Sov. Min. SSSR po khimii, no. 11, 1961,
51-60)

TEXT: Synopsis. Synthesis, properties, the methods of curing of poly-
ester resins and also the properties of cured unsaturated polyester resins
are described. 55 references. [Abstracter's note: Complete translation.]

Card 1/1

LI, P.Z.; MIKHAYLOVA, Z.V.; SEDOV, L.N.; KOSTYGOV, V.A.

Synthesis and investigation of unsaturated polyester resins
based on N-bis-beta-oxethylaniline. Plast.massy no.12:11-14
'61. (MIRA 14:12)

(Esters)
(Resins, Synthetic)

SEDOV, L.N.

"Glass Plastics" (from the English) edited by F.Morgan. Reviewed
by L.N.Sedov. Khim.prom. no.3:228 Mr '62, (MIRA 15:4)
(Glass reinforced plastics)

SEDOV, L.N.; LI, P.Z.

Rate of gel formation in unsaturated polyester resins at high
temperatures. Plast.massy no.10:13-16 '63. (MIRA 16:10)

L 19727-65 EWT(m)/EPF(c)/EPR/EPF(j)/T Pc-L/Pr-L/PS-L RPL/ASD(m)-3 WW/HM
 ASSIGN NR: AP5003602 S/0191/64/000/007/0010/0015

AUTHOR: Sedov, L. N.; Li, P. Z.

TITLE: Influence of the degree of polycondensation of unsaturated polyesters on the water stability of their copolymers with styrene

SOURCE: Plasticheskiye massy, no. 7, 1964, 10-15

TOPIC TAGS: polyester plastic, polystyrene, copolymerization, condensation reaction

Abstract: The influence of the degree of polycondensation, composition, and conditions of synthesis of polyesters on the water absorption of their copolymers with styrene at temperatures of about 20°C was investigated. Products based on polyesters with increased molecular weight (lower acid number) exhibited greater water stability. Copolymers of maleates were found to absorb somewhat less water than copolymers of fumarates, despite the greater cross-linking density of the latter, probably as a result of the greater activity of fumarates in copolymerization with styrene. No significant difference in the water absorption was observed in set resins based on polyesters produced at 180 and 200°C. The optimum styrene content in the systems investigated (copolymers of styrene with polydiethylene glycol maleate, polydiethylene glycol fumarate, polydiethylene glycol maleate phthalate, polydiethylene

Card 1/2

L 19727-65

ACCESSION NR: AP5003602

glycol fumarate phthalate, and polyethylene glycol maleate adipate) was 30-33%. Modifying the polyesters by introducing phthalate radicals increased in the water stability of the copolymers by 50-200%. The process of water absorption of the copolymers and glass plastics based on them was found to be satisfactorily described by the Andrews-Johnston equation. Orig. art. has 1 table, 7 graphs, and 4 formulas.

ASSOCIATION: none

SUBMITTED:00

ENCL: 00

SUB CODE: MT

NO REF SOV: 011

OTHER: 009

JPRS

Card 2/2

SEDOV, I.N.; LI, P.T.

Effect of the molecular weight on the viscosity of unsaturated
polyesters and their concentrated solutions. Plast. massy no.9:
10-13 '64. (MIRA 17:10)

ACC NR: AR5020055

SOURCE CODE: UR/0081/65/000/012/S061/S061

AUTHOR: Sedov, L.N.

ORG: none

TITLE: Polyester resin of a higher shock resistance

SOURCE: Ref. zh. Khimiya, Abs. 128365

REF SOURCE: Vestn. tekhn. i ekon. inform. N.-1. in-t tekhn.-ekon. issled. Gos. kom-
ta khim. prom-sti pri Gosplane SSSR, vyp. 9, 1964, 15-17

TOPIC TAGS: polyester plastic, epoxide, electric insulator

TRANSLATION: Liquid¹ polyester resin, brand PN-69² has a low viscosity ($2-3 \cdot 10^4$ cp.) and easily fills complex configuration forms and permeates paper, glass textures, glass felt and other fillers. The resin consists of polyester and styrene. The hardening of the compound at $\sim 20^\circ$ is accompanied only by an insignificant warming of the castings. The hardened PN-69 resin has high shock- and rupture-resistance³ and great relative elongation when ruptured. PN-69 resin may be used as a base for glues, fillings, impregnations, lining compounds, reinforced plastics and electric insulating⁴ lacquer-tissues. PN-69 resin combines well with epoxy resins, and in this process the viscosity of the latter is significantly lowered. Hardened epoxy-polyester resins are noted for high shock resistance. Data is given on the physical-mechanical and electric-isolation properties of glass textoline made of glass textures by the contact method. Z. Ivanova.

SUB CODE: 11, 09

Card 1/1

KUKHARSKIY, M. [Kucharski, M.], red.; LINDEMAN, Ya., red.;
MAL'CHEVSKIY, Ya. [Malczewski, J.], red.; RADEK, T.,
red.; SEDOV, L.N. [translator]; FILIPPENKO, L.K.
[translator]; DANILEVICH, T.A., red.

[Laboratory work in the chemistry and technology of polymeric
materials. Translated from the Polish] Laboratornye raboty po
khimii i tekhnologii polimernykh materialov. Moskva, Khimiia,
1965. 393 p. (MIRA 18:7)

SEB, L.N.; IL, P.L.; DUBIN, Y.L.; AUSTIN, C.M.

Using the vis primary method for determining the molecular weight
of unsaturated polyesters. Plast. Massy no. 6:9-10 165.

(MIRA 18:8)

L 52130-65 EFF(c)/EPR/EWP(j)/EWT(m)/T Pc-l/Pr-l/Ps-l RM/WW

ACCESSION NR: AP5015292

UR/0286/65/000/009/0067/0067

AUTHORS: Sedov, L. N.; Li, P. Z.; Savicheva, O. I.

TITLE: A method for obtaining unsaturated polyesters. Class 39, No. 170664

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 67

TOPIC TAGS: polyester, unsaturated polyester, glycol, dicarboxylic acid, aliphatic acid, adipic acid

ABSTRACT: This Author Certificate presents a method for obtaining unsaturated polyesters by the condensation of glycol with saturated dicarboxylic acid and a subsequent condensation with unsaturated dicarboxylic acid or with its anhydride. To impart elasticity to the solidified polyesters, aliphatic acids with a long chain, such as adipic acid, are used as the saturated dicarboxylic acid.

ASSOCIATION: none

SUBMITTED: 10Jun63

ENCL: 00

SUB CODE: 00

NO REF SOV: 000

OTHER: 000

Card 1/1 *mb*

L 52132-65 EWP(j)/EWT(m) Pc-4 RM

ACCESSION NR: AP5015294

UR/0286/65/000/009/0068/0068

AUTHORS: Sedov, L. N.; Savicheva, O. I.

TITLE: A method for obtaining unsaturated polyester resins. Class 39, No. 170666

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 68

TOPIC TAGS: polyester, resin, carboxyl compound, glycol

ABSTRACT: This Author Certificate presents a method for obtaining unsaturated polyester resins by the polycondensation of warmed carboxyl-bearing compounds and various glycols. To obtain products with better properties, acid diesters of glycols are used as carboxyl-bearing compounds.

ASSOCIATION: none

SUBMITTED: 23Sep63

ENCL: 00

SUB CODE: 00, MT

NO REF SOV: 000

OTHER: 000

Card 1/1 mb

L 20378-66 EWT(m)/EWP(j)/T WW/RM

ACC NR: AP6006544

(A)

SOURCE CODE: UR/0191/65/000/011/0032/0035

AUTHORS: Sedov, L. N.; Li, P. Z.; Avdeyeva, G. M.

39
B

ORG: none

TITLE: Properties of polyesters of diethylene glycol and maleic and sebacic acids and their styrene copolymers

SOURCE: Plasticheskiye massy, no. 11, 1965, 32-35

TOPIC TAGS: polyester, resin, polymer, copolymerization, styrene, chemical composition, diethylene glycol, maleic acid, sebacic acid, copolymer

ABSTRACT: The influence of the composition on the properties of mixed polyesters of diethylene glycol and maleic and sebacic acids and on their styrene copolymers was investigated. The polymers were synthesized after P. Z. Li and L. N. Sedov (Plast. massy No. 9, 12, 1963). The effect of polymer composition on the molecular weight, acid number, hydroxyl number, density, viscosity, density of cross linkages, rate of gelatinization, strength limit, and deformation was determined. The experimental results are presented in graphs and tables (see Fig. 1). It was found that the composition of the polymer had a greater effect on its strength

Card 1/2

UDC: 678.674.4'0

2

L 20378-66

ACC NR: AP6006544

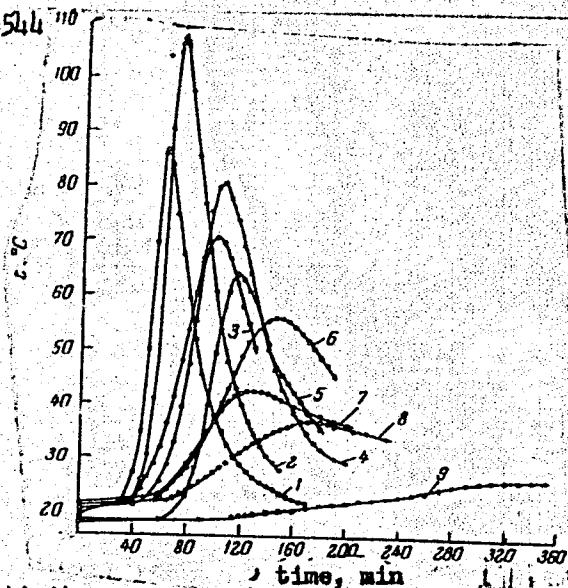


Fig. 1. Temperature curves for the copolymerization of unsaturated esters with styrene. 1 - 3: polyester I; 4 - 6: polyester II; 7 - 9: polyester III. Styrene content: 1, 4, 7 - 33%; 2, 5, 8 - 50%; 3, 6, 9 - 67% where I, II, and III refer to the following mole ratios of diethylene glycol: maleic anhydride: sebacic acid, I - 1:0.5:0.5; II - 1:0.33:0.67; III - 1:0.166:0.834 respectively.

than on its elasticity. Orig. art. has: 3 tables, 4 graphs, and 3 equations.

SUB CODE: 07,11/

SUBM DATE: none/

ORIG REF: 003/

OTH REF: 010

Card 2/2 vmb

ACC NR: AP6000349 SOURCE CODE: UR/0286/65/000/021/0047/0047
 44,55 44,55 44,55 44,55 44,55
 AUTHORS: Sedov, L. N.; Li, P. Z.; Zotov, L. I.; Akutin, M. S.; Kargin, V. A.;
 Krupkina, F. A. 44,55
 ORG: none
 TITLE: Method for obtaining elastic copolymers. Class 39, No. 176062 50 B
 SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 21, 1965, 47
 TOPIC TAGS: polymer, polymerization, polyester, polycondensation
 ABSTRACT: This Author Certificate presents a method for obtaining elastic copolymers of unsaturated polyester resins with different monomers. To decrease shrinkage and the exothermic effect during hardening, the polyesters used are those obtained by condensation of unsaturated acids or their anhydrides with polyalkyleneglycols (e.g., with polytetramethyleneglycol) with molecular weight from 1000 to 40 000. 1
 SUB CODE: 11/ SUBM DATE: 04May62

Hw
 Card 1/1

BEREZKIN, V.G.; PAKHOMOV, V.P.; ALISHOYEV, V.R.; STAROBINETS, L.L.; MARKOVICH,
Z.P.; SEDOV, L.N.

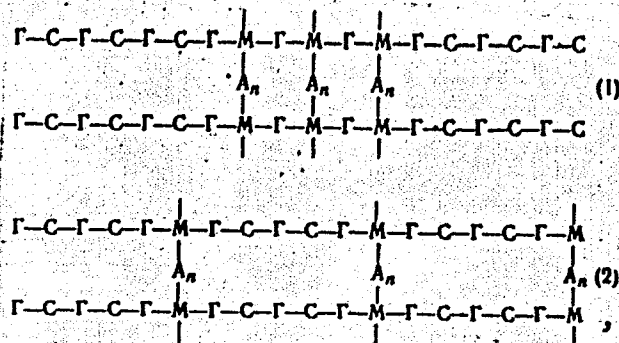
Some new methods of studying polymeric compounds by gas chromatography. Vysokom.soed. 7 no.1:185-187 Ja '65.

(MIRA 18:5)

(A) L 13359-66 EWT(m)/EWP(j)/T RPL WW/RM
 ACC NR: AP6002173 SOURCE CODE: UR/0191/66/000/001/0011/0013
 AUTHORS: Sedov, L. N.; Li, P. Z. 33
 ORG: none 30
 TITLE: The two-stage method for synthesizing unsaturated polyesters. Production of polyesters of maleic acid, modified with certain dicarboxylic acids by two-stage condensation B
 SOURCE: Plasticheskiye massy, no. 1, 1966, 11-13
 TOPIC TAGS: polymer, resin, polyester, polycondensation, chain polymerization, ethylene glycol, esterification, carboxylic acid, anhydride
 ABSTRACT: A new method for the synthesis of unsaturated polyesters having a regular structure was developed in a study constituting an extension of a previously published work (Avt. svid. No 170666; Byull. izobr., No. 9, 1965). This method consists of a two-stage synthesis. The first stage involves the synthesis of the diester of glycol and an unsaturated acid or of a mixed diester of saturated and unsaturated acids by the addition of dicarboxylic anhydrides to glycol. The second stage consists of condensing the acid diester of glycol with the same or a different glycol in the mole ratio of 2:1. A schematic for the vulcanized or hardened products of the first and second stages respectively is presented as
 Card 1/2 UDC: 678.744.342

L 13359-66

ACC NR: AP6002473



where \square is the glycol residue, M - dicarboxy-acid residue, C - modifying dicarboxy acid residue, and A - cross-linking chains of the vulcanizing agent. The mechanical properties of polyethyleneglycol-maleinateadipinate copolymers synthesized by a two-stage condensation were determined, and the results tabulated. It is concluded that an increase of the styrene in the initial solution from 40 to 50% increases the elasticity and tensile strength of the polymers. This conclusion is corroborated by previously published work by the authors on the properties of the products of the one-stage synthesis. Orig. art. has: 2 tables and 2 equations.

SUB CODE: 11,07

SUBM DATE: none/

ORIG DATE: 008/ OTH REF: 006

Card 2/2

1 00127-67 EWT(1)

ACC NR: AP6025886

SOURCE CODE: UR/0292/66/000/005/0037/0042

AUTHOR: Raskin, L. Ya. (Engineer); Sedov, L. N. (Engineer)

ORG: none

TITLE: Analysis of an autonomous inverter stable to external short-circuits

SOURCE: Elektrotehnika, no. 5, 1966, 37-42

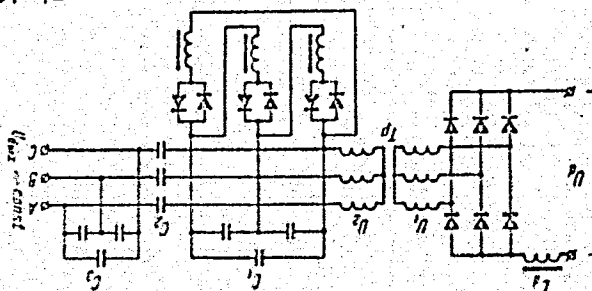
TOPIC TAGS: inverter, power inverter

ABSTRACT: Formulas for calculating parameters are deduced, and operation is analyzed of a series-parallel inverter (see figure) which is intended for supplying a network of power consumers; the sustained short-circuit current is specified.

The thyristor-type inverter with-stands external short-circuits and

hence can be protected by automatic-reclosing schemes. The principal parameters of the inverter are determined by two methods, analytical and graphical (by means of a vector diagram). The formulas were verified experimentally on an 8-kw 220-vac, 170--260-vdc inverter; its capacitors were: $C_1 = 10 \mu F$, $C_2 = 100 \mu F$,

$C_3 = 20 \mu F$
Card 1/2



UDC: 621.314.58.001.24

ACC NR: AP6025886

per phase; the output waveshape was practically sinusoidal. Orig. art. has:
4 figures and 28 formulas.

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 003 / OTH REF: 001

Card 2/2 *LC*

SEDOV, M.

Reusable electric socket board. Stroitel' no. 3:11 Mr '61.

(MIRA 14:2)

(Electric wiring, Interior)

GRYAZNOV, A.I.; METAL'NIKOV, Yu.N.; MOLCHANOV, S.S.; NOVIKOVA, G.V.;
PETUKHOV, V.A. PISAREV, V.Ye.; PYSHKIN, B.N.; PANTYUSHKOVA, Ye.V.;
SEDOV, M.G.; SHORIN, K.N.; YAKIMENKO, M.N.

The 680 Mev. synchrotron of the Physical Institute of the Academy
of Sciences of the U.S.S.R. Atom. energ. 13 no.3:228-234 S '62.
(MIRA 15:9)

(Synchrotron)

S/908/62/000/000/006/008
B163/B180

AUTHORS: Belyayev, B. S., Pantyushkova, Ye. V., Sedov, M. G.
TITLE: Chamber and vacuum system of the 680 Mev synchrotron
SOURCE: Uskoritel' elektronov na 680 Mev; sbornik statey. Ed. by
Z. D. Andreyenko. Moscow, Gosatomizdat, 1962. 58-63

TEXT: The chamber, which consists of four quadrants, joined by rubber-packed metal flanges, with inner and outer radius 182 and 218 cm respectively, is made of porcelain. Between the quadrants are straight sections 53 cm long. Each quarter of the chamber consists of 5 or more segments, each of which has nozzles for pumping, and introducing beam control devices. The four straight sections are used for injection, drift tube, intensity and position indicator, and resonator. The total volume of the vacuum chamber with nozzles is 500 l. The vacuum is of the order of several 10^{-6} mm Hg. The inner surface was partly coated with a 50 μ m thick silver layer, and the rest, leaving the acceleration gap with colloidal graphite. The segments were assembled on a special bench, the

Card 1/2

Chamber and vacuum system of the ...

S/908/62/000/000/006/008
B163/B180

joints being made with 5φ (BF) glue which was polymerized at 150-170°C. The chamber was evacuated by 7 oil diffusion pumps MM-100 (MM-100), the preliminary vacuum being created by one or two fore-pumps BH-1 (VN-1), which type was also used for backing the diffusion pumps in operation. Oil traps cooled with liquid nitrogen were used to exclude vapor from the chamber. There are 3 figures.

Card 2/2

RUNOV, V.K., kand.tekhn.nauk, dotsent; SEDOV, M.G., dotsent; IONOV, V.Ye., inzh.

Some defects in the introduction of large silica blocks in the city
of Gorkiy. Trudy GISI no.43:16-24 '63. (MIRA 17:4)

SEDOV, N.D.; MININZON, R.D.

In the heat-treating department of the plant. Metallurg 7
no.10:11-12 0 '62. (MIRA 15:9)

1. Nachal'nik termicheskogo tsekha zavoda "Dneprospetsstal"
(for Sedov).
 2. Nachal'nik metallograficheskoy laboratorii
TSentral'noy zavodskoy laboratorii zavoda "Dneprospetsstal"
(for Mininzon).
- (Steel--Heat treatment) (Furnaces, Heat treating)

SEDOV, M.G., dotsent; BABUSHKINA, O.N., inzh.

Potentials for lowering the cost of large panels. Trudy GISI
no.43:5-9 '63. (MIRA 17:4)

SEDOV, M. P.

USSR/Engineering - Construction, Dams Dec 50

"Facing Shells of Reinforced Concrete for the But-
tresses and Lateral Braces of Overflow Dams," M. P.
Sedov, Engr

"Gidrotekh Stroi" No 12, pp 5-11

Shells made of reinforced concrete were used during
constn of large hydraulic structure in 1939. In the
fall of 1949, special commission studied in detail
performance and behavior of shells for past 10-11 yr
and found them very satisfactory. Describes fabri-
cation of concrete plates and their installation on
the face of various members of structure. More than

184Tb7

USSR/Engineering - Construction, Dams Dec 50
(Contd)

55,000 sq m of plates were used for facing concrete
surfaces of dam and sluice.

184Tb7

SEDOW, M. P.

USSR/Engineering - Hydraulics, Dams

Jun 51

"Rapid Method for Erecting the Reinforced-Concrete
Trestle of a Spillway Dam Using Carrying Rein-
forcing Structures and Concrete Face Slabs,"
M. P. Sedov, Engr

"Gidrotekh Stroi" No 6, pp 1-5

Describes construction of trestle 186 m long for
gantry crane on top of spillway dam. Works com-
pleted in 28 days, during which 680 tons of re-
inforcing structures and over 4,000 sq m of re-
inforced-concrete facing plates were installed,
and 3,350 cu m of concrete were placed.

199T48

USSR/Engineering - Hydraulics, Dams Sep 51

"Experiment in Erecting Earth Dikes Under Winter Conditions," M. P. Sedov, Engr

"Gidrotekh Stroi" No 9, pp 7-10

Describes erection of dike, consisting of crib-work and earth fill, for protecting work on construction of hydroelec station and spillway dam against spring floods. Concludes that chief cause of damage to earth structures erected in winter is not frozen ground used for fill, but

201790

USSR/Engineering - Hydraulics, Dams Sep 51
(Contd)

nonuniform distribution of density in body of structure. Dike described, withstanding 3 spring floods, demonstrated possibility of conducting hydraulic works all year around.

201790

SEDOV, M. P.

SaDOV, M.P.; ZHURIN, V.D., doktor tekhnicheskikh nauk, professor,
redaktor.

[Protective shells and welded reinforcing structures in
hydraulic-engineering construction] Zashchitnye obolochki
i svarnye armokonstruktsii v gidrotekhnicheskome stroitel'-
stve. Pod red. V.D.Zhurina. Moskva, Gos. energ. izd-vo, (MLRA 7:2)
1953. 142 p.
(Hydraulic engineering) (Reinforced concrete construction)

SRDOV, M.P., inzhener.

Letter to the editors. Gidr.stroi. 25 no.2:51-52 '56. (MLBA 9:8)
(Hydraulic engineering) (Concrete construction)

SEDOV, M.P., inzh.; ZHURIN, V.D., prof., red.; VAKHRAMEYEV, A.K., red.;
BORUNOV, N.I., tekhn.red.

[Protective reinforced concrete shells in building hydraulic
structures] Zashchitnye zhelezobetonnye obolochki v gidro-
tekhnicheskoy stroitel'stve. Pod red. V.D.Zhurina. Moskva,
Gos.energ.izd-vo, 1958. 95 p. (MIRA 13:2)
(Precast concrete construction)

SOV/98-59-8-6/33

15(6)

AUTHOR: Sedov, M.P., Engineer

TITLE: An Experiment in the Use of Rigid Concrete in the Construction of the Bukhtarminskaya GES

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1959, Nr 8, pp 23-27 (USSR)

ABSTRACT: The author first outlines the advantages of rigid concrete (its fast rate of durability, great stability and economy of manufacture) and briefly describes the manufacturing process. Although fairly widely used elsewhere, the first attempt at using rigid concrete in the USSR was in the construction of the Bukhtarminsk GES in 1957, of which a brief account is given. The percentage of sand used (34%) was high in comparison with American (22% in the Hungry Horse and Canyon Ferry schemes) and French practice (17% on the Tigne Dam). The importance is stressed of the treatment of the concrete mixture with a high-frequency vibrator and the use of additives of 4-5 pieces with a maximum size of 150-200 mm. Details of the concrete plant on the Bukhtarminskaya site on the right bank of the Irtysh are given, and table 2 contains data of the

Card 1/3

SOV/98-59-8-6/33

An Experiment in the Use of Rigid Concrete in the Construction of the Bukhtarminskaya GES

composition of the concrete, as laid down by the Irtysh GES Construction Centre. The concrete mixture for the split buttresses was transported by MAZ-205 dump trucks and put in place by a 20 ton Skoda crane at the rate of 5-6 loads an hour, while that for the 6th section of the dam (Fig.1) was laid in 30-40cm horizontal layers by an "Abus" gantry crane. Sealing was carried out by a group of 1-50 vibrators (maximum frequency 5,700 revs./min), and the use of the air-inducing additives SNV produced a sharp rise in the viscosity of the mixture. After a brief account of the time and the amount of concrete laid, the author goes on to describe the mobile housing shell constructed to assist building operations (Fig.2), which could be heated in winter to 10-15°C. Research and experiments on the durability of rigid concrete have had favorable results, while tests for impermeability proved unsuccessful in the case of concrete used for the split buttress, although it was successful in the case of the 6th section of the dam. In order to conduct observations of the temperature of the concrete, 47 thermometers and 2 thermographs were installed in the blocks of the

Card 2/3

SOV/98-59-8-6/83

An Experiment in the Use of Rigid Concrete in the Construction of the Bukhtar-minskaya GES

split buttress, which was divided into zones A,B,C, and D, and the results of these observations are shown in graph form in fig.3. The construction of heated casings around zones A, B and C enabled the dumping of concrete to be carried out at a constant temperature of 5°C throughout the winter. While the problem of laying concrete in the winter months has now been solved, there remains the difficulty of working in summer conditions at temperatures well over 10°C. The article ends with a list of the conclusions drawn from the lesson of this project, which are enumerated in the text. There are 3 photographs, 2 tables, and 1 graph.

Card 3/3

SEDOV, M., inzh.

Work practices of general construction brigades. Stroitel'
no. 2:14 F '60. (MIRA 13:5)
(Gorkiy--Building)

SEDOV, M.P., inzh.; GADASIN, A.G., inzh.

Self-propelled machine for smoothing and compacting concrete
mixes. Gidr.stroi. 30 no.1:50-51 Ja '60.

(MIRA 13:5)

(Concrete construction--Equipment and supplies)

KOGAN, P.S.; SANINA, N.L.; KAZARNOVSKIY, S.N.; Prinimali uchastiye:
SEDOV, M.P.; KVASOV, A.A.

Removal of acetylenic compounds from the butylene-bivinyll
fraction of gases of petroleum product pyrolysis by the
methode of selective hydrogenation. Khim.prom. no.10:717-719
0 '62. (MIRA 15:12)

(Olefins)
(Acetylene compounds)
(Petroleum-Refining)

PAVLOV, Konstantin Vasil'yevich; SEDOV, N.A., redaktor; YEZDOKOVA, M.L.,
redaktor; VAYNSHTEYN, Ye.B., tekhnicheskii redaktor

[Principles of safety engineering in the mining industry; safety
techniques, emergency measures, and fire control] Osnovy tekhniki
bezopasnosti v gornoi promyshlennosti; tekhnika bezopasnosti, gorno-
spasatel'noe delo i protivopozharnaya tekhnika. Moskva, Gos. nauchno-
tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1954. 470 p.
[Microfilm] (MLRA 8:4)

(Mining engineering--Safety measures)

SEDOV, N. A.

SEMEVSKIY, Vladimir Nikolayevich; GOLOMOLZIN, A.I., redaktor; POKROVSKIY, N.M., professor, retsenzent; SEDOV, N.A., gornyy inzhener, retsenzent; PARTSEVSKIY, V.N., redaktor; MIKHAILOVA, V.V., tekhnicheskiiy redaktor.

[Bolt reinforcements] Shtangovaia krep'. Moskva, Gos.nauchno-tekhnicheskoe izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 243 p. (MIRA 9:6)

(Mine timbering)

SERGEYEV, A.A., red.; ANPILOGOV, I.M., red.; ASSONOV, V.A., red.; BABAYANTS, N.A., red.; BABOKIN, I.A., red.; BALAMUTOV, A.D., red.; BOGORODSKIY, N.N., red.; BOLONENKO, D.N., red.; BUCHNEV, V.K., red.; VAKHMINTSEV, G.S., red.; VORONKOV, A.K., red.; GARKALENKO, K.I., red.; GORBATOV, P.Ye., red.; GOLOVLEV, V.Ya., red.; DOKUCHAYEV, M.M., red.; DUBNOV, L.V., red.; YEVTSEYEV, A.D., red.; YEREMENKO, Ye.K., red.; ZENIN, N.I., red.; KRIVONOGOV, K.K., red.; KUPALOV-YAROPOLK, I.K., red.; MATSYUK, V.G., red.; NIKOLAYEV, S.I., red.; ONISHCHUK, K.N., red.; PETROV, K.P., red.; PILYUGIN, B.A., red.; PLATONOVA, A.A., red.; POLESIN, Ya.L., red.; POKROVSKIY, L.A., red.; POMESTUN, D.Ye., red.; POLYUSHKIN, A.Kh., red.; REYKHAR, V.P., red.; SEDOV, N.A., red.; SIDORENKO, I.T., red.; FIDELEV, A.A., red.; CHAKHMAKHCHEV, A.G., red.; CHEMODUROV, M.Ya., red.; SHUMAKOV, A.A., red.; YAREMENKO, N.Ye., red.; PARTSEVSKIY, V.N., red.izd-va; ATTOPOVICH, M.K., tekhn.red.

[Standard safety regulations for blasting operations] Edinye pravila bezopasnosti pri vzryvnykh rabotakh. Izd.2. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1958. 318 p. (MIRA 13:1)

1. Russia (1923- U.S.S.R.) Komitet po nadzoru za bezopasnym vedeniyem rabot v promyshlennosti i gornomu nadzoru. (Mining engineering--Safety measures)

SEDOV, N.A.
NEYMARK, A.M., inzhener; SEDOV, N.A., inzhener.

More attention to the training of miners. Bezop.truda v prom. 1 no.3:16
Mr '57. (MLRA 10:4)

(Mining engineering--Safety measures)

SEDOV, N.A., inzh.

Safety appliances for preventing cable laps in a mine hoist.
Bezop.truda v prom. 4 no.10:32 0 '60. (MIRA 13:11)
(Mine hoisting—Safety appliances)

SEDOV, N.N.; NIKOLAYENKO, L.S.; RIZBERG, I.I.

Management of alcohol plants. Spirt. prom. 25 no. 5:34-36 '59.
(MIRA 12:10)

(Distilling industries)

SEDov, N. G.

S/908/62/000/000/007/008
B163/B180

AUTHORS: Babkin, V. M., Bozin, G. M., Gagin, Ye. N., Yerebin, L. V.,
Metal'nikov, Yu. N., Orlovskiy, G. N., Petukhov, V. A.,
Pisarev, V. Ye., Sedov, N. G., Shorin, K. N.

TITLE: Some starting-up and operating problems of the 680 Mev
synchrotron

SOURCE: Uskoritel' elektronov na 680 Mev; sbornik statey. Ed. by
Z. D. Andreyenko. Moscow, Gosatomizdat, 1962. 64-74

TEXT: The momentary particle orbit during the first revolutions is distorted due to a number of uncontrollable deviations from the ideal magnetic field configuration. This must be corrected in order to capture a sufficient part of the injected electrons. Indicating devices measuring deviations help to find the initial conditions, e.g., the correct injection angle and timing for which the free oscillations about the equilibrium orbit become minimal during the first revolutions. Similar methods were used to correct for deviations of the median surface of the magnetic field from the geometrical symmetry plane. For these measurements

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Some starting-up and operating ...

S/908/62/000/000/007/008
B163/B180

a chopper was used, consisting of an electric deflector immediately behind the 60° magnetic sector field in the injection line, by which short pulses of 1-2 μsec duration could be selected from the injected beam. The signalling devices were flags and grids coated with luminescent paint, sometimes in connection with photomultipliers. In this way the orbit deviations could be reduced to 2-3 cm in radial in 1-2 cm in vertical direction. In the quasibetatron and the synchrotron acceleration stages the envelope of all oscillating orbits was measured by movable vanes, three or four in each sector. In the first stage, about 15 μsec , the accelerating field is disconnected but the magnetic field is growing. When the momentary particle orbit has been reduced, at 0.2 to 0.3 mm per revolution, from the inflector to the central chamber radius, the accelerating electric field is switched on. Under optimal conditions, the capture coefficient is 2%, which corresponds to $2.5 \cdot 10^9$ electrons per cycle. To avoid undesirable resonance effects from the passing electron beam in the resonator during the first stage the resonator is detuned, and the second stage is performed at a smaller orbit radius. When the field is switched off at the end of the accelerating cycle, the magnetic field is still rising and the electrons hit the target, a tungsten wire 1 mm

Card 2/3

Some starting-up and operating ...

S/908/62/000/000/007/008
B163/B1B0

diam, inside the acceleration orbit. The intensity of the γ radiation produced was measured in a thick-walled graphite ionization chamber. A total γ energy per cycle of $2 \cdot 10^9$ Mev could be achieved, and the number of accelerated electrons per cycle was of the order of 10^8 . There are 6 figures.

Card 3/3

137-58-4-6714

Translation from Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 58 (USSR)

AUTHORS Romanov, I.N. Sedov, N.N.

TITLE Oxygen Smelting of Special and High-temperature Resistant Steels in the Electric Furnace (Dovodka v elektropechi spetsialnykh i zharopornykh staley pri pomoshchi kisloroda)

PERIODICAL Mashinostroitel' Belorussii, Nr 2 (3), 1957, pp 74-75

ABSTRACT: The smelting of heat-resistant and other special steels in an 0.5-t acid arc furnace, with ore used to oxidize C, is accompanied by increased furnace-lining wear, overheating of the metal, and, as a result, a high percentage of rejection of castings, due to cracks or increase in the duration of the heat, and in gas and non-metallic inclusions in the metal. For this reason, O_2 is used at the Minsk Automobile Plant instead of Fe ore. The O_2 , under 10 atm pressure, is delivered to the bath by means of a tube 3 m long and 1/2" in diameter, from the usual bottle through a regulator. A 2-m length of the tube is wrapped in asbestos cord smeared with refractory clay, and calcined. The tube is inserted in the bath at an angle of 30-35°; it is not let down to touch the bottom. When O_2 was introduced in this fashion, 0.16% of the C

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137-58-4-6714

Oxygen Smelting of Special (cont.)

burned off in 1 min during the first heat and 0.4% in 3 min in the second. It is noted that employment of O₂ made possible a 35-min reduction in heat time and a reduction of 400 kwh in power consumption, increased the life of the furnace lining, reduced the gaseous and nonmetallic inclusions in the metal, eliminated rejects due to hot cracks, and made possible the saving of 20% Ni when the heat was run on the basis of a charge consisting 100% of heat-resistant steel scrap.

A. Sh.

1. Steels--Oxygen smelting--Processes

Card 2/2

Sedov, N.N.

AUTHOR SPIVAK G.V., DOMBROVSKAYA T.N., SEDOV N.N. PA - 2652
 TITLE The examination of the domain structure of a ferromagnetic by means of photoelectrons. (Nablyudeniye domennoy struktury ferromagnetika pri pomoshchi fotoelectronov.- Russian.)
 PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 1, pp 78 - 81 (USSR).
 RECEIVED: 5/1957 Reviewed: 6/1957
 ABSTRACT The present work describes an electron-optical method for forming an image of the structure of the domain of a ferromagnetic by means of photoelectrons focussed by a magnetic optical system. By the application of this method an image which is qualitatively satisfactory and has a good effect of contrast is obtained the magnetic microfields of the polycrystalline and the monocrystalline surfaces of the ferromagnetic crystals. The present work is based upon the following main idea: The fields of the domains can be made directly visible by putting the electron bundle into interaction with a cathode electron lens (in the cathode plane of which the magnetic fields to be investigated, the magnetic "microlenses", are introduced). These "microlenses" produce a chromatic and a spherical aberration of the immersion optical system and hereby the "microlenses" are made visible on the fluorescence screen. The method facilitates

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PA - 2652

The examination of the domain structure of a ferromagnetic by means of photoelectrons.

the visibility of the entire domain and its boundaries. Furthermore, contrast and resolving power of the electron-optical image can be controlled by changing the parameters of the immersion optical system. The authors used glass model of a photoelectronic emission microscope with uninterrupted evacuation. As source of the photoelectrons in the microscope an antimony-cesium cathode was used for which the ferromagnetic sample to be investigated served as a base. The locally distributed magnetic field of the base penetrates the semiconductor photocathode and forms the image of the magnetic field on the fluorescence screen. With the help of this device the authors obtained images of the domains on the hexagonal surface of a cobalt monocrystal and on the polished surface of polycrystalline cobalt. Various special features of this method are discussed and compared with those of other methods. Photos of these photoelectronic images are added. (3 illustrations)

ASSOCIATION: Moscow State University.

PRESENTED BY: LEONTOVICH M.A. 3.11. 1956.

SUBMITTED: 30.10. 1956.

AVAILABLE: Library of Congress.

CARD 2/2

Sedov, N. N.

82158
S/048/60/024/06/03/017
B019/B067

9.3/20

AUTHORS: Spivak, G. V., Pryamkova, I. A., Sedov, N. N.

TITLE: On the Formation of the Electron Optical Contrast in the Observation of "Hollow Spots" in Emitters

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 6, pp. 640-646

TEXT: This is the reproduction of a lecture delivered at the 9th All-Union Conference on Cathode Electronics from October 21 to 28, 1959 in Moscow. Contrast problems of emission and of quasi-emission (mirror-type) electron optical systems were investigated. In the first chapter, the authors describe the influence exercised by the normal and the tangential component of the electric field on electron kinetics, and in the second chapter they deal with the mechanism of formation of the contrast. The formation of "hollow spots" due to local potential differences of the reflecting electrode is explained, and the fact that the microfields of these electrodes can be investigated at any temperature is shown to be the most important property of this type of electrodes. The influence

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X

On the Formation of the Electron Optical
Contrast in the Observation of "Hollow Spots"
in Emitters

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B019/B067

exercised by "hollow spots" on the resolving power of an immersion ob-
jective is briefly dealt with, and in the following the local micro-
fields on emitting surfaces are discussed in detail. Here, "hollow spots"
observed by the authors on polished, well activated diodes consisting of
copper-aluminum-magnesium alloys and on rather smooth L-cathodes (Ref. 1)
are described. By comparing the secondary electron emission images and the
thermionic emission images the authors observed that the former are caused
by the roughness, and the latter by the inhomogeneities of the work func-
tion, i.e., by the "hollow spots". The formation of the contrast in oxide
cathodes was investigated in detail where the formation of the mirror
image, the thermal image, and the photoemission image were studied. For
this purpose, the combined electron microscope shown in Fig. 4 was used.
It was found that the geometrical relief of the cathode surface, the
"hollow spots" and the electric microfields play an important part in the
formation of contrast. In the final chapter, some typical cases of the
formation and the inversion of the contrast by superposition of micro-
fields are discussed. There are 5 figures and 10 Soviet references.

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On the Formation of the Electron Optical
Contrast in the Observation of "Hollow Spots"
in Emitters

S/048/60/024/06/03/017
B019/B067

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta im.
M. V. Lomonosova
(Physics Department of Moscow State University imeni
M. V. Lomonosov)

Card 3/3

4X

24804

S/048/61/025/006/004/010

B117/B212

~~9-21-20~~ 1138/1331)

AUTHORS: Sedov, N. N., Spivak, G. V. and Isayeva, N. F.

TITLE: Electron-optical measurement of electric and magnetic microfields on surfaces

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25, no. 6, 1961, 725-729

TEXT: The present paper has been presented at the 3rd All-Union Conference on Electron Microscopy, held in Leningrad from October 24 to 29, 1960. The authors investigated experimentally the quantitative ratio between the strength of the local microfield on the surface of an electron emitter and the image contrast in the image plane. If such a correlation exists, it is possible with an electron-optical emission system not only to observe the electric and magnetic surface microfields but also to measure their strength. Using an additional secondary emission device with an JEM-75 (EEM-75) emission microscope, the structure and distribution of the thermionic emission of effective cathodes has been investigated. Due to such studies it is possible to establish a correlation between the structure

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B117/B212

Electron-optical measurement of ...

and emission of such a heat emitter (Ref. 6: Sbitnikova I. S., Dubinina Ye. M., Spivak G. V., Fetisov D. V., Pribory i tekhnika. eksperm., No 5, 78 (1959); Radiotekhnika i elektronika, 3, 1077 (1958)). A combination of photo- and thermionic emission leads to the same conclusions in the same emission microscope (Ref. 3: Spivak G. V., Pryamkova I. A., Sedov N. N., Izv. AN SSSR. Ser. fiz., 24, 640 (1960)). The microscope used by the authors was similar to that described in Ref. 3. It is a combined glass-metal device. The vacuum was measured to be $(3-5) \cdot 10^{-7}$ mm Hg with an external glass casing and good degasification. The magnification of the microscope varied from 50 to 500. A beam catcher not used in the microscope described in Ref. 3 was mounted in the center of the luminescent screen. The microscope was built in several variations with photo- and secondary emission from the surface of the object. In the latter case, the microscope had a socket with an electron gun instead of the lighting device, which was used to bombard the object with about 100-ev electrons. A heater allowed to observe the hot cathodes also during thermionic emission. The possibility of measuring local magnetic fields was checked by using a number of artificial specimens consisting of alternating magnetic and non-magnetic stripes (e.g. iron and copper). The front side of

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B117/B212

Electron-optical measurement of ...

the specimen was polished. Magnetizing was done by an external magnetic field. The distribution of the magnetic field across the specimen and the current density on the screen were compared during focusing onto the area of magnetic inhomogeneities. The image was shifted by means of Helmholtz coils to measure the current density across the individual sections of the specimen. In some cases, the brightness of the luminescent screen was also measured by employing an $\Phi 37-19$ (FEU-19) photomultiplier in a housing impervious to light. The test results of the brightness of the screen and the direct measurement of the current density on the screen agreed. The magnetic field across the specimen was determined from the change of the resistance of a thin bismuth wire (50 and 100 μ diameter). From the typical curves obtained for the magnetic field across the surface of the specimen, it was found that points with maximum values of the magnetic field correspond to a minimum current density on the screen and vice versa. The measurements showed that the relation $j_1/j_2 = H_2/H_1$ (2) is actually fulfilled with an accuracy of 5-10%. (The subscripts 1 and 2 denote the fields and the current density of electrons across the individual sections of the object). The accuracy depends on the exact performance of the experiment and especially on the even lighting of the specimen. With the given

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Electron-optical measurement of ...

accuracy it is possible to measure small magnetic fields which are difficult to measure by other methods. Measurements of magnetic fields were done with artificial inhomogeneities of ~ 0.1 mm. At present, this method is applied to measure natural magnetic microfields which can be found in a number of objects. Active heat emitters were also investigated. The current density of individual sections of pressed cathodes was measured in the temperature range from 600° - 800°C . The lower temperature limit was determined by the thermionic emission. The upper limit was determined by the blurring of the image caused by the space charge. Richardson lines were drawn by using the temperature dependence of the current density. The work function determined from the inclination of the straight lines ranged from 1.9-3.1 eV. Most of the emission spots had a work function close to the lower value. If the spacing of the spots and the difference of the contact potentials determined from the difference of the work function are known, then it is possible to estimate the field potential of the spots for the object in question. It is in the order of several kv/cm. Electron-optical emission systems make it possible to determine magnetic and electric microfields on the surface not only qualitatively but also quantitatively. The authors thank the student E. Sh. Gasparyan for cooperation and A. I. Shal'nikov for

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B117/B212

Electron-optical measurement of ...

suggestions for the construction of bismuth measuring devices. There are 3 figures and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta im. M. V. Lomonosova (Division of Physics of Moscow State University imeni M. V. Lomonosov)

Card 5/5

SEDOV, N.N.; SPIVAK, G.V.; ISAYEVA, N.F.

Electron-optical measurement of electric and magnetic microfields on
surfaces. Izv.AN SSSR.Ser.fiz. 25 no.6:725-729 Je '61.
(MIRA 14:6)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta
im. M.V.Lomonosova.
(Electronic measurements) (Electric fields)
(Magnetic fields)

S/048/61/025/012/007/022
B116/B138

AUTHORS: Spivak, G. V., Kirenskiy, L. V., Ivanov, R. D., and Sedov,
N. N.

TITLE: Development of mirror-type electron microscopy of magnetic
microfields

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25,
no. 12, 1961, 1465 - 1469

TEXT: The authors present electron-optical photomicrographs of domain structures of various ferromagnetic materials and compare them with powder patterns. The distribution of the local magnetic fields scattered by the specimen is obtained from the contrast. G. V. Spivak, I. N. Prilezhayeva, and V. K. Azovtsev (Dokl. AN SSSR, 105, 965 (1955)) were the first to recommend the electron mirror for photographing magnetic microfields. They carried out their experiments at the laboratoriya elektronnoy optiki MGU (Electron Optics Laboratory of MGU). The electron mirror has the following advantages over the methods of secondary electron emission or photoeffect: high field sensitivity (the illuminating electron beam is stopped by an

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B116/B138

Development of mirror-type...

electric field in front of the specimen, i. e. "probing" of the spatial field structure; high contrast, due to the forwards and backwards motion of the electron; and the possibility of examining the magnetic structure at different distances from the source of the microfield. The optical system can be traversed by both slow and fast electrons. A 50-kv voltage focuses the reflected electrons and enhances the resolving power of the instrument. Domain structure electron-mirror pictures of a $\text{PbO}(\text{Fe}_2\text{O}_3)_6$ crystal magnification: 400, 800, and 1500), cobalt (400 and 800), and a cobalt film ($\sim 1000 \text{ \AA}$, 400 times), were in good agreement with ones produced by the powder method (400). The local magnetic fields were determined from the contrast. Calculations have shown that the contrast depends on the product H_z (z = extent of the H-field). The magnetic field decreases almost exponentially. Results are shown in Fig. 6. Finally it is noted that magnetic fields can be examined under an electron mirror microscope and that their strength can be measured at different distances from the specimen. The magnification here achieved (about 2000) can be further increased. There are 6 figures and 7 Soviet references.

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Development of mirror-type...

S/043/61/025/012/007/022
B116/B138

ASSOCIATION: Fizicheskii inkul'tet Moskovskogo gos. universiteta im. M. V. Lomonosova (Division of Physics of Moscow State University imeni M. V. Lomonosov), Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Physics of the Siberian Department of the Academy of Sciences USSR)

Fig. 6. (a) Field above the artificial specimen, measured with a bismuth micrometer at different magnetic biasing currents $H = H_0 e^{-z/z_0}$; (b) mirror calibration curve; (c) scattering field above the hexagonal plane of the $PbO(Fe_2O_3)_6$ crystal, $z_0 = 0.02$ mm; (d) scattering field above the hexagonal axis which is nearly parallel to the cobalt face, $z_0 = 0.05$ mm. Legend: z_0 is a constant, B_1 and B_2 are the various degrees of brightness on the screen.

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S/048/62/026/011/003/021
B125/B102

24,7700

AUTHORS:

Sedov, N. N., Spivak, G. V., and Ivanov, R. D.

TITLE:

Electron-optical study of a p-n junction in germanium and silicon

PERIODICAL:

Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya,
v. 26, no. 11, 1962, 1332-1338

TEXT: The authors describe an electron-microscopic method of examining a p-n junction with the help of ion-induced electron emission. This method offers the following advantages: (1) The surface of the specimen and the junction can be examined simultaneously; (2) the overall length of the junction is visible; (3) the image is not darkened by any auxiliary grid; (4) the method is likely to be suitable also for greater enlargements; (5) quantitative measurement of the potential distribution in the p-n junction is very simple. The secondary electrons are knocked out of the specimen by positive ions of 3-4 kev and then are accelerated and focused with the immersion objective of a high-quality emission microscope with improved metal mirror. Such secondary emission microscopes are

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B125/B102

Electron-optical study of a ...

particularly suitable for examining semiconductors with surface junctions that are not heated. The photographs are taken inside the vacuum chamber. The disturbances of the accelerating field that arise over the p-n junction bend the electron trajectories. The electrons deflected by these disturbances are kept away from the screen of the microscope by an aperture stop. When a voltage of 5-10 v is applied in the back direction, the image of the p-n junction assumes the shape of a dark band which need not be straight and which broadens as voltage increases. The range of the potential in the p-n junction can be determined from a comparison between the secondary emission image and the electron mirror. The construction of a mirror electron microscope was described by G. V. Spivak et al. (Izv. AN SSSR, Ser. fiz., 25, 683 (1961)). The shape of the potential barrier on the p-n junction was determined by using the sharp contrast between the reflected image of the surface and the boundary of the "spot" of secondary emission. The method described here permits measurements at sufficiently small intervals. Its accuracy is dependent upon the properties of the electron mirror which is more sensitive to inhomogeneities, such as p-n junctions, than is an electron microscope with ion-induced electron emission because the impurities change the work

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Electron-optical study of a ...

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B125/B102

function. There are 10 figures.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta im.
M. V. Lomonosova (Physics Division of the Moscow State
University imeni M. V. Lomonosov)

Card 3/3

SPIVAK, G.V.; IVANOV, R.D.; PAVLYUCHENKO, O.P.; SEDOV, N.N.

Formation of contrast in mirror-type, emission, and scanning
electron-optical systems. Izv. AN SSSR. Ser. fiz. 27 no.9:
1139-1146 S '63. (MIRA 16:9)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta
im. Lomonosova.

(Electron microscope)

SED OV, N.N.; SPIVAK, G.V.; DYUKOV, V.G.

Use of an emission electron microscope in measuring the potential distribution in a p-n junction. Izv. AN SSSR. Ser. fiz. 27 no.9: 1179-1183 S '63. (MIRA 16:9)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. Lomonosova.
(Electron microscopy) (Junction transistors)

SED OV, N.N.; SPIVAK, G.V.; DYUKOV, V.G.

Use of an emission electron microscope in studying semiconductors
and dielectrics. Izv. AN SSSR. Ser. fiz. 27 no.9:1173-1178 S
'63. (MIRA 16:9)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta
im. M.V.Lomonosova.

(Electron microscopy)